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ABSTRACT

This study examined receptive and expressive language as a precursor of maladaptive behavior in African-American, inner-city children. It compared the adaptive and maladaptive behavior scores of 202 children--most from single-parent and low-income families--from District of Columbia Public Schools (DCPS) at age 12 to their scores on similar measures administered at DCPS preschool and kindergarten programs. Analysis focused on the relationship between language-related data and current level of adaptive or maladaptive functioning. The results indicated that deficits in early receptive language skills, but not expressive language skills, were related to later behavioral difficulties in inner-city children. (MDM)

Early Language Deficits Associated with Subsequent Maladaptive Behaviors of Inner-City Children: A Longitudinal Analysis

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Early Language Deficits Associated with Subsequent Maladaptive Behaviors of Inner-City Children: A Longitudinal Analysis

Previous research has found an increased prevalence of psychiatric disorders among language-delayed children (e.g., Baker & Cantwell, 1987; Stevenson & Richman, 1978), and parents of language-delayed children report higher levels of behavior difficulties in their children (Beitchman, Nair, Clegg, Ferguson, & Patel, 1986). While the directional nature of this relationship is unclear, Nelson (1973) suggested that behavior problems might be the symptom of language impairment rather than its cause. Similarly, Baker and Cantwell (1987) concluded that language factors may play a more direct role in development of children's psychiatric disorders than previously hypothesized. While delays in both receptive (comprehension) and expressive (production) language are more notable in children with diagnosable psychiatric disorders (Baker & Cantwell, 1987), receptive delays rarely occur in the absence of socialization problems (Paul, Looney, & Dahm, 1991). Although poor receptive skills may not be apparent if children use nonlinguistic strategies to mask comprehension deficits (Chapman, 1978), receptive ability may actually be a better predictor of adaptive skill than IQ or expressive ability (Soriano & Paul, 1984).

The present research examined receptive and expressive language as a precursor of maladaptive behavior in inner-city children. This population was of special interest because Baker and Cantwell (1987) found non-Caucasian, language-disordered children from single-parent homes to be at-increased-risk for development of psychiatric disorders.

Method

Sample

As part of a longitudinal study, teachers in 66 District of Columbia Public Schools (DCPS) completed the Vineland Adaptive Behavior Scale (Classroom Edition) and its Maladaptive Behavior Domain subscale (Interview Edition) for 202 children (M age = 124.8 months) who had previously attended DCPS Pre-K/Head Start and kindergarten. These previously studied children represented two cohorts ('Classes of 2000 and 2001') in either 'Year 6' or 'Year 7' of schooling. The sample was 98% African-American and 54% female. Most children (77%) qualified for subsidized lunch based upon low family income and 69% lived in single parent homes.

Measures

Children's current development was compared with the following previously collected measures: a) Pre-K/Head Start and kindergarten Vineland Adaptive Behavior scores, b) Pre-K/Head Start and kindergarten progress reports, c) 'Year 5' Comprehensive Test of Basic Skills (CTBS) standardized achievement test scores, and d) 'Year 5' progress reports. Analyses focused on the relationship between language-related data and current levels of adaptive/ maladaptive functioning. All data were analyzed using a covariate to control for possible economic differences (subsidized versus nonsubsidized lunch) between children.

Maladaptive behavior was measured for the first time in this follow-up study using the Maladaptive Domain of the Vineland Adaptive Behavior Scales. This domain measures undesirable behaviors that may interfere with the individual's adaptive functioning. Part I was used in this study because it

measures less severe forms of maladaptive behavior. The 27 behaviors in this domain were scored from (0) no, never occurs to (1) sometimes or partially to (2) yes, usually occurs. Scores could range from 0 to 54. Based upon national norms, raw scores were categorized at three levels of maladaptiveness: Nonsignificant (50th percentile or below), Intermediate (51st to 84th percentile), and Significantly Maladapted (85th percentile or above). This scale also serves as a screening device to determine the need for further, in-depth observations and evaluation of behavior.

Results

Current Functioning

Maladaptive scores in this sample of children ranged from 0 to 52 (M = 8.39, median = 6), with 79% of the children receiving some score greater than 0 for at least 1 of the 27 maladaptive behaviors assessed by this scale. Table 1 shows specific areas of difficulty for children who displayed at least one maladaptive behavior.

Insert Table 1 about here

Based on normative age expectations, only 49% of the sample was classified at the Nonsignificant level of maladaptiveness (NM), while 23% showed Intermediate levels of maladaptation (IM), and 28% were Significantly Maladapted (SM). At the SM level, boys outnumbered girls (41% vs 21%, $\chi^2(2) = 8.44$, $p < .01$).

Current language development. Significant differences in recent Vineland Communication Domain scores were found for the three maladaptive categories

(NM = 101.45, IM = 91.78, SM = 85.13; F (2, 166) = 15.13, $p < .001$). Post-hoc analyses ($p < .05$) indicated that, compared to IM and NM children, SM children were lower in communication skills. Compared to NM children, IM children were also found to be lower in overall development of communication skills.

Expressive language. No significant differences in current expressive language skills were found across maladaptive categories ($p = .19$). However, compared to children with moderately high expressive language, more than twice as many who were currently low in expressive language were also classified as being Significantly Maladapted (47% low expressive were SM, 19% moderately high expressive were SM).

Receptive language. Statistically significant differences in current receptive language skills were found across maladaptive categories. Of children currently low in receptive language, 57% were classified as SM (twice the expected number), and only 21% (half the expected) were classified as NM on the maladaptive scale ($\chi^2(4) = 27.13$, $p < .001$). Among children who were currently moderately low in receptive skills, 31% were SM while only 17% with adequate receptive skills were classified as SM.

Earlier Vineland Scores

As shown in Tables 2 and 3, only future SM children showed a significant drop in communication skills from Pre-K/Head Start to 'Year 6' or 'Year 7' in school [F (2,101) = 13.71, $p < .001$], and the greatest decreases in communication skills since kindergarten [F (2,61) = 4.51, $p < .01$].

Receptive language. Earlier measures of receptive language development indicated no significant differences between current maladaptive categories had existed during Pre-K/Head Start (see Table 4). However, by kindergarten

more future SM children than expected were low in receptive skills ($\chi^2(6) = 15.96$, $p < .01$; see Table 5).

Expressive language. No significant difference between future maladaptive categories were found for expressive skills in either Pre-K/Head Start or kindergarten.

Insert Tables 2-5 about here

Earlier School Grades

A decrease from Pre-K/Head Start to kindergarten in pre-reading [F (2,63) = 2.80, $p = .06$] and listening skills [F (2,55) = 3.45, $p < .05$] was found for future SM children only. No differences in acquisition of early literature skills were found from Pre-K/Head Start to kindergarten as all three groups of children improved in this area.

Future NM children maintained expected progress in reading and language-related grades from Pre-K/Head Start to 'Year 5' and from kindergarten to 'Year 5.' Future IM children had lower than expected 'Year 5' spelling grades related to lower listening skills in Pre-K/Head Start ($\chi^2(1) = 2.74$, $p = .09$) and kindergarten ($\chi^2(1) = 6.78$, $p < .01$). By 'Year 5' SM children had made significantly less progress than expected, and (see Table 6) were lower in reading [F (2,151) = 5.43, $p < .01$], language [F (2,151) = 3.64, $p < .05$], and spelling [F (2, 151) = 5.42, $p < .01$].

Insert Table 6 about here

Earlier Language-Related Test Scores

As seen in Table 7, future SM children scored lower than others in standardized achievement measures of total reading [F (2,102) = 3.35, $p < .05$], reading vocabulary [F (2,102) = 3.01, $p < .05$], and reading comprehension [F (2,102) = 2.96, $p < .05$]. They also scored lower in all CTBS language measures including total language [F (2,102) = 4.78, $p < .01$], spelling [F (2,102) = 2.66, $p = .07$], language mechanics [F (2,102) = 6.83, $p < .01$], and language expression [F 92,102) = 2.55, $p = .08$].

Insert Table 7 about here

Predicting Maladaptive Behavior

Language-related measures from each school year were entered into separate stepwise regression analyses. No significant predictors were found at the Pre-K/Head Start level. Kindergarten receptive skills, 'Year 5' CTBS language mechanics scores, and current receptive skills accounted for 7.2% (beta = -.2692, $p < .01$), 8.5% (beta = -.2917, $p < .001$), and 13.3% (beta = -.3649, $p < .001$) of the variance in maladaptive classifications respectively. When these three variables were entered into a final stepwise regression, only kindergarten receptive skills added significantly to the predictive value of current receptive skills (R^2 change = .064, $p < .01$, cumulative R^2 =.197). Discriminate analysis indicated kindergarten receptive skills were the best measure for successfully categorizing 78% of the children who would eventually be classified as Significantly Maladapted.

Discussion

Deficits in early receptive, but not expressive, language skills were related to later behavioral difficulties of inner-city children. The appearance of receptive deficits during kindergarten suggests that children may have successfully masked deficits in Pre-K/Head Start through nonlinguistic strategies. However, those strategies would not be adaptive when confronted with the academic demands of this school system's kindergarten curriculum. Although deficits in receptive skills accounted for less than 20% of the variance in maladaptive behavior, early intervention in the speech and language area may prevent development of more severe behavioral disorders in these especially high risk children. These current data support Baker and Cantwell's preliminary conclusions (1987, p. 509) that "in some cases, speech and language therapy may be sufficient intervention to prevent or ameliorate behavioral problems; in other cases, it may not."

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Table 1

Areas of Difficulty for Children who Displayed Some Maladaptive Behavior

	Yes, Usually	Sometimes
Sucks thumb or fingers	10%	10%
Is overly dependent	36%	7%
Withdraws	36%	9%
Wets bed	1%	1%
Exhibits an eating disturbance	4%	1%
Exhibits a sleep disturbance	4%	2%
Bites fingernails	22%	12%
Avoids school or work	34%	10%
Exhibits extreme anxiety	26%	7%
Exhibits tics	7%	3%
Cries or laughs too easily	25%	11%
Has poor eye contact	26%	8%
Exhibits excessive unhappiness	22%	4%
Grinds teeth during day or night	5%	2%
Is too impulsive	29%	13%
Has poor concentration & attention	45%	22%
Is overly active	30%	15%
Has temper tantrums	26%	14%
Is negativistic or defiant	33%	14%
Teases or bullies	22%	15%
Shows lack of consideration	32%	13%
Lies, cheats, or steals	21%	10%
Is too physically aggressive	23%	8%
Swears in inappropriate situations	18%	7%
Runs away	5%	2%
Is stubborn or sullen	37%	17%
Is truant from school or work	10%	7%

Table 2

Pre-K/Head Start and Combined 'Year 6'/'Year 7' Vineland Communication Domain Scores (N = 105) for each Future Maladaptive Category

	Pre-K/Head Start	'Year 6'/'Year 7'
Maladaptive Category		
Nonsignificant	99.04	102.92
Intermediate	99.62	93.24
Significant	105.39	83.42

Table 3

Kindergarten and Combined 'Year 6'/'Year 7' Vineland Communication Domain Scores (N = 65) for each Future Maladaptive Category

	Kindergarten	'Year 6'/'Year 7'
Maladaptive Category		
Nonsignificant	103.30	102.94
Intermediate	100.00	92.38
Significant	108.79	90.26

Table 4

Pre-K/Head Start Vineland Receptive Subdomain Classifications (N = 141) for each Future Maladaptive Category

Pre-K Receptive Skills:	Low	Moderately Low	Adequate	Moderately High
Maladaptive Category				
Nonsignificant	33%	45%	45%	53%
Intermediate	17%	17%	25%	23%
Significant	50%	38%	30%	24%

Table 5

Kindergarten Vineland Receptive Subdomain Classifications (N = 82) for each Future Maladaptive Category

K Receptive Skills:	Low	Moderately Low	Adequate	Moderately High
Maladaptive Category				
Nonsignificant	20%	71%	32%	64%
Intermediate	20%	0%	26%	23%
Significant	60%	29%	42%	13%

Table 6

'Year 5' Grades (N = 155) for each Maladaptive Category

Maladaptive Category:	Nonsignificant	Intermediate	Significant
Reading	2.46	2.29	1.79
Language	2.55	2.32	2.03
Spelling	2.73	2.32	2.00

Note. Grades are calculated on a 5-point scale, with 0 = F and 4 = A.

Table 7

Third Grade CTBS Scores (N = 106) for each Future Maladaptive Category

Maladaptive Category:	Nonsignificant	Intermediate	Significant
Total Reading	53.26	50.26	44.26
Word Attack Skills	56.44	54.01	52.36
Vocabulary	55.06	48.88	46.77
Comprehension	51.14	50.93	42.84
Total Language	58.54	50.61	44.68
Spelling	55.60	49.46	46.16
Language Mechanics	62.53	52.10	47.51
Language Expression	53.98	47.62	43.14

Note. Scores are expressed in standard score units with M = 50 and SD = 10.